

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date: **TBD**

Region: Fayetteville Regional Office
County: Richmond
NC Facility ID: 7700082
Inspector's Name: Evangelyn Lowery-Jacobs
Date of Last Inspection: 10/17/2019
Compliance Code: 3 / Compliance - inspection

<p align="center">Facility Data</p> <p>Applicant (Facility's Name): NCEMC - Hamlet Plant</p> <p>Facility Address: NCEMC - Hamlet Plant 162 Cooperative Way Hamlet, NC 28345</p> <p>SIC: 4911 / Electric Services NAICS: 221112 / Fossil Fuel Electric Power Generation</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>	<p align="center">Permit Applicability (this application only)</p> <p>SIP: 02D: .0521, .0524, .0530, .1100 02Q: .0317, .0400 NSPS: Subpart KKKK NESHAP: n/a PSD: PM, NOx, CO PSD Avoidance: NOx, CO_{2e} NC Toxics: 02D .1100 112(r): n/a Other: Cross State Air Pollution Rule</p>
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Contact Data			<p align="center">Application Data</p> <p>Application Number: 7700082.20A & .20B Date Received: 02/21/2020 Application Type: Renewal (TV, .20A; TIV, .20B) Application Schedule: TV-Renewal</p> <p align="center">Existing Permit Data</p> <p>Existing Permit Number: 09488/T09 Existing Permit Issue Date: 03/07/2016 Existing Permit Expiration Date: 02/28/2021</p>
<p align="center">Facility Contact</p> <p>Shawn Fowler Manager, Combustion Turbine Generation (704) 848-4002 162 Cooperative Way Hamlet, NC 28345</p>	<p align="center">Authorized Contact</p> <p>John Cook VP, Asset Management (919) 875-3046 3400 Summer Blvd. Raleigh, NC 27616</p>	<p align="center">Technical Contact</p> <p>Khalil Porter Environmental Scientist (919) 875-3088 3400 Sumner Boulevard Raleigh, NC 27616</p>	

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2018	---	78.72	9.94	96.51	4.83	0.8927	0.5768 [Formaldehyde]
2017	---	14.42	2.26	21.33	0.8800	0.1786	0.1209 [Formaldehyde]
2016	---	22.12	3.48	34.18	1.37	0.2784	0.1927 [Formaldehyde]
2015	---	33.12	4.22	36.58	2.07	0.3650	0.2270 [Formaldehyde]
2014	---	29.02	2.89	26.77	1.92	0.2921	0.1583 [Formaldehyde]

<p>Review Engineer: Russell Braswell</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p align="center">Comments / Recommendations:</p> <p>Issue 09488/T10 Permit Issue Date: TBD Permit Expiration Date: TBD+5 years</p>
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1. Purpose of Application:

North Carolina Electric Membership Corporation – Hamlet Plant ("NCEMC"; "the facility") currently operates a power plant in Richmond County under Title V air quality permit 09488T09 ("the existing permit"). The Title V permit also incorporates the Phase II Acid Rain Permit (a.k.a. "Title IV permit"). Both of these permits are set to expire on February 28, 2021. NCEMC submitted applications .20A and .20B in order to renew the Title V and Title IV permits as required by General Condition K of the existing permit. The renewal applications did not request any specific modifications to the permits.

Because the applications for permit renewal were received at least six months¹ before the expiration date, the existing permits will remain in effect, regardless of expiration date, until these permit applications are approved or denied.

2. Facility Description:

This facility operates twelve simple-cycle combustion turbines arranged in pairs. Each turbine burns natural gas and No. 2 oil and is equipped with water injection. The facility primarily generates electricity for demand response (e.g. peak-shaving).

3. Application Chronology:

- February 26, 2019 Applications .20A and .20B received.
- March 24, 2020 An initial draft of the Title V permit and application review were sent to DAQ staff (Tom Anderson, Mark Cuilla, Samir Parekh, Greg Reeves, Heather Carter) and NCEMC staff (Khalil Porter, John Cook). For a summary of comments received, see Attachment 1.
- April 27, 2020 A second draft of the Title V permit were sent to Mark Cuilla, Evangelyn Lowery-Jacobs, and Khalil Porter to address comments from the first draft.
- XXX Public notice
- XXX Permit issued.

4. Title V Permit Modifications Following the Previous Permit Renewal:

The Title V permit was most recently renewed on March 7, 2016. No modifications have been made to the facility since the permit was renewed.

¹ General Condition K of the existing permit requires that the renewal applications be submitted nine months before the expiration. General Condition K was changed to six months after the existing permit was issued. These applications were received before the nine-month deadline as well.

5. Changes to the Existing Title V Permit:

Page*	Section*	Description of Changes
Throughout	Throughout	<ul style="list-style-type: none"> Updated dates and permit numbers. Fixed formatting.
4	2.1 A.1	<ul style="list-style-type: none"> Added recordkeeping and reporting requirement for the hours of operation of each turbine in Units 1 through 5.
7	2.1 B.1	<ul style="list-style-type: none"> Added recordkeeping and reporting requirement for the hours of operation of Unit 6. Added requirement to use NSPS compliance methods to demonstrate compliance with the NOx concentration limit and fuel sulfur limit.
13	2.2 A.3	<ul style="list-style-type: none"> Clarified that the NOx limit is based on firing 50% or more of natural gas or fuel oil. Included the "good work practices" requirement per 40 CFR 60.4333.
16	2.5	<ul style="list-style-type: none"> Removed references to 02D .2400 because this rule has expired and no longer includes any text.
17	3	<ul style="list-style-type: none"> Updated General Conditions to v5.3.

6. Regulatory Overview and Rules Review:

Under the existing permit, NCEMC is subject to the following State Implementation Plan ("SIP") rules:

- 15A NCAC 02D .0521 "Control of Visible Emissions"
- 15A NCAC 02D .0524 "New Source Performance Standards" (40 CFR Part 60, Subpart KKKK)
- 15A NCAC 02D .0530 "Prevention of Significant Deterioration"
- 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" [State enforceable only]
- 15A NCAC 02Q .0317 "Avoidance Conditions" (PSD Avoidance)
- 15A NCAC 02Q .0400 "Acid Rain Procedures"
- 15A NCAC 02Q .0512 "Permit Shield and Application Shield"

In addition to the above SIP rules, NCEMC is also subject to the Cross State Air Pollution Rule. This rule is not included in North Carolina's SIP and is Federally-enforceable only.

NCEMC's requirements under each rule that applies to this facility are discussed below. In addition, rules that do not apply to this facility are also discussed below. NCEMC's applicability to various Federal programs (e.g. NSPS, MACT, PSD, 112(r), and CAM) is also discussed below.

a. 02D .0521 "Control of Visible Emissions"

This rule limits visible emissions ("VE") from emission sources with no other specific VE emission limit. For sources constructed after 1971, the opacity limit is 20% over any six-minute period, with the following exceptions: (1) No six-minute period exceeds 87 percent opacity; (2) No more than one six-minute period exceeds 20 percent opacity in any hour; and (3) No more than four six-minute periods exceed 20 percent opacity in any 24-hour period. Each turbine at this facility is subject to this rule.

In general, no VE is expected from properly operated turbines that fire natural gas or low-sulfur No. 2 oil. Given that NCEMC is operating the turbines in accordance with NSPS Subpart KKKK and PSD, the Title V includes no additional requirements for 02D .0521.

Based on the most recent inspection report, NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections.

b. 02D .0524 "New Source Performance Standards" ("NSPS"; 40 CFR Part 60)

This rule incorporates the NSPS rules into North Carolina's SIP. The only NSPS rule that applies to this facility is Subpart KKKK "Stationary Combustion Turbines".

Subpart KKKK applies to stationary gas turbines constructed after February 18, 2005. Each turbine at this facility is subject to this rule.

In general, this rule limits emissions of nitrogen oxides ("NOx") and sulfur dioxide ("SO₂") based on the type of fuel being fired. In order to demonstrate compliance with the emission limits, NCEMC limits the sulfur content of fuels burned in the turbines and estimates NOx emissions based on protocol in Appendix E to 40 CFR Part 75. Records of monitoring activities must be kept and reported twice per year.

The existing permit does not specify which emission limit to apply when two fuels are being fired simultaneously. Based on §60.4325, the emission limit at any given time is based on whichever fuel is contributing more than 50% of the heat input. This information will be added to the permit. This change will not affect NCEMC's compliance requirements and is only for clarity.

Based on the most recent inspection report, NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

c. 02D .0530 "Prevention of Significant Deterioration" ("PSD"; 40 CFR Parts 52 and 70)

This facility is considered a major source under PSD. As a result of a previous PSD review, the Title V permit includes annual emission limit and Best Available Control Technology ("BACT") emission limits:

Emission Source	Requirements	Demonstrate compliance by:	Notes
Units 1 through 5	<ul style="list-style-type: none"> Annual emission limit for CO. CO BACT standards based on load and ambient temperature. 	<ul style="list-style-type: none"> Limit annual hours of operation on natural gas and No. 2 oil. 	Limits and compliance methods first included in Title V permit 09488T07 (issued October 10, 2012).
Unit 6	<ul style="list-style-type: none"> Annual emission limits for PM, NOx, and CO. Monthly maximum NOx concentration. CO BACT standards based on load and ambient temperature. 	<ul style="list-style-type: none"> Limit sulfur content of No. 2 oil. Limit annual hours of operation on natural gas and No. 2 oil. 	

The existing permit does not include any specific method of demonstrating continued compliance with the PSD requirements. This will be changed to require NCEMC to monitor, record, and report the hours

of operation of each turbine. In addition, NCEMC will monitor the NO_x exhaust concentration and the sulfur content of the fuel oil used in Unit 6. Note that this monitoring is also required by NSPS Subpart KKKK.

Based on the most recent inspection report, NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

d. 02D .1100 "Control of Toxic Air Pollutants" [state-enforceable only]

This rule requires facilities to emit toxic air pollutants ("TAPs") at rates such that the acceptable ambient levels ("AALs") in 02D .1104 are not exceeded.

In order to demonstrate compliance with the AALs, NCEMC performed air dispersion modeling. The modeling demonstration was approved on August 24, 2011. The modeled emission rates were incorporated into the Title V permit as emission limits starting with permit 09488T07. Based on the application review for the 09488T07 permit, no monitoring, recordkeeping, or reporting is required for NCEMC to demonstrate compliance with the modeled emission rates because emission rates of TAPs are each below 50% of their respective AAL.

NCEMC is expected to continue to comply with this rule.

e. 02Q .0317 "Avoidance Conditions" (PSD avoidance)

This rule allows facilities to accept an enforceable limit in order to avoid applicability of another rule. NCEMC has accepted limits on NO_x and CO_{2e} emissions in order to avoid additional requirements under 02D .0530 (a.k.a. "PSD avoidance").

The table below summarizes the PSD avoidance limits applicable to NCEMC:

Emission Source	Requirements	Demonstrate compliance by:	Notes
Units 1 through 5	Less than 245 tons of NO _x per 12-month period, combined across Units 1 through 5.	<ul style="list-style-type: none"> Monitor NO_x emissions according to NSPS Subpart KKKK (see Section 0.b). Report NO_x emissions twice per year. 	Limits and compliance methods first included in Title V permit 09488T07.
Unit 6	Less than 75,000 tons of CO _{2e} per 12-month period.	<ul style="list-style-type: none"> Monitor CO_{2e} emissions per Appendices F and G of 40 CFR Part 75 and Table A-1 of 40 CFR Part 98. Report CO_{2e} emissions twice per year. 	

Based on the most recent inspection report, NCEMC appears to be in compliance with this rule. Continued compliance will be determined with subsequent inspections and reports.

f. 02Q .0400 "Acid Rain Procedures"

This rule incorporates the acid rain program (40 CFR Part 72) into North Carolina's SIP.

The specific requirements for the acid rain program are included in the Phase II permit application submitted by NCEMC. The Phase II permit application is included in the Title V permit as an attachment.

In general, compliance with the acid rain program is determined by USEPA, not DAQ. Continued compliance will be determined by US EPA.

g. 02Q .0512 "Permit Shield and Application Shield"

Paragraph 02Q .0512(a)(1)(B) allows Title V permits to specifically identify rules that are not applicable to the facility (referred to as a "permit shield"). The existing permit includes a permit shield for 15A NCAC 02D .2400 and the federal Clean Air Interstate Rules.

The requirements of 02D .2400 have expired, and the rule no longer contains any text at all. No permit shield is necessary for this rule, so references to this rule will be removed from the Title V permit.

There are no compliance requirements associated with a permit shield.

h. Cross State Air Pollution Rule ("CSAPR"; 40 CFR Part 97, Subparts AAAAA, BBBBB, and CCCCC) [Federally-enforceable only]

This group of rules applies to fossil-fuel-fired combustion sources that 1) produce electricity for sale, and 2) have a generator capacity greater than 25 megawatts. Each combustion turbine at this facility is subject to CSAPR.

CSAPR limits NO_x and SO₂ emissions. Compliance with CSAPR is determined by USEPA, not DAQ. The Title V permit contains a reference to CSAPR, but no specific compliance requirements.

i. Non-applicable Rules:

There are several SIP and Federal rules that could potentially apply to this facility, but ultimately do not.

1. 02D .0614 "Compliance Assurance Monitoring" ("CAM"; 40 CFR Part 64)

This rule incorporates the requirements of 40 CFR Part 64 into North Carolina's SIP. CAM applies to individual emission sources based on the following criteria:

- The source is equipped with a control device,
- The source being controlled is subject to a non-exempt emission standard (defined by 02D .0614(b)(1)),
- The control device is being used to comply with the emission standard, and
- The source being controlled has potential emissions of the pollutant subject to the emission standard greater than major source thresholds.

Each turbine at this facility is controlled using water injection systems, which are used to control NO_x emissions. The following table examines each NO_x emission limit for CAM applicability:

Emission Limit / Rule	Triggers CAM?	Notes
02D .0524 (NSPS Subpart KKKK)	No	The use of the predictive emission monitoring system allowed by Appendix E to 40 CFR Part 75 constitutes a continuous compliance determination method under 02D .0614(b)(1)(F).
02Q .0317 (PSD Avoidance)	No	02D .0614(b)(1)(E)
02Q .0400 (Acid Rain Permit)	No	02D .0614(b)(1)(D)
40 CFR Part 97 (CSAPR)	No	02D .0614(b)(1)(D)

No rule triggers CAM applicability, and therefore CAM does not apply to this facility.

2. 02D .0900 "Volatile Organic Compounds" and 02D .1400 "Nitrogen Oxides" (a.k.a. "Reasonably Available Control Technology"; "RACT")

In general, RACT rules apply to areas currently considered as nonattainment for ozone (see 02D .0902(f) and 02D .1402(d)). Richmond County is not such an area. Therefore, no RACT rules apply to this facility.

3. 02D .1111 "Maximum Achievable Control Technology" ("MACT"; 40 CFR Part 63)

This rule incorporates the MACT rules into North Carolina's SIP.

This facility is not considered a major source of hazardous air pollutants ("HAPs") because it does not have the potential to emit more than 10 tons of any individual HAP or 25 tons of total combined HAPs. Therefore, rules that apply specifically to major sources do not apply to this facility.

There are no non-major source MACT rules that apply to this facility.

4. 02D .2100 "Risk Management Program" (a.k.a. "Section 112(r) of the Clean Air Act")

This facility does not appear to store any material listed in 40 CFR 68.130 above its respective threshold. Therefore, this rule does not apply to this facility. In addition, this facility does not have any increased requirements under Section 112(r) of the Clean Air Act.

5. 40 CFR Part 60, Subpart GG "Stationary Gas Turbines"

This rule applies to stationary gas turbines constructed or modified after October 3, 1977. However, §60.4305(b) specifically states that turbines subject to NSPS Subpart KKKK are exempt from this rule. Each turbine at this facility is subject to NSPS Subpart KKKK, and therefore are exempt from Subpart GG.

6. 40 CFR Part 60, Subpart TTTT "Greenhouse Gas Emissions for Electric Generating Units"

Per §60.5509(a), this rule applies to electric generating units (such as combustion turbines powering generators) that were constructed or reconstructed after June 18, 2014. Each turbine at this facility was constructed before this date, and have not been reconstructed after this date. Therefore, this rule does not apply to this facility.

7. Emissions Review

This permit renewal is not expected to impact potential or actual emissions from this facility.

For a summary of actual emissions from this facility, see the table on the first page of this document.

8. Other Regulatory Concerns:

- This facility was most recently inspected by Evangelyn Lowery-Jacobs on October 17, 2019. NCEMC appeared to be in compliance with the existing permit at the time of that inspection.
- There have not been any Notices of Violation issued to this facility since the previous Title V permit renewal.
- No application fee, zoning consistency determination, or Professional Engineer's seal is required for Title V and Title IV permit renewals.

9. Public Notice and EPA Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. Virginia is an affected State, and Forsyth County is an affected local program.

- The Public Notice and EPA Review periods began on XXX

10. Recommendations

Issue permit 09948T10.

Attachment 1 to Review of Applications 7700082.20A & .20B
North Carolina Electric Membership Corporation – Hamlet Plant

Comments Received on Initial Drafts of Title V Permit 09488T10

- Evangelyn Lowery-Jacobs, by email on March 26, 2020

The email indicated typos in the draft permit.

Response: The indicated issues have been corrected.

- Khalil Porter, by email on April 6, 2020

The email indicated typos in the draft permit.

Response: The indicated issues have been corrected.

- Mark Cuilla, by email on April 22, 2020

1. The email indicated typos in the draft permit.

Response: The indicated issues have been corrected.

2. The application review should include information regarding the 50% language included in Section 2.2 A.3.

Response: I agree. I have added an explanation of this change.

3. Should the permit include any monitoring/recordkeeping/reporting for PSD?

Response: After discussing this issue further, I agree that there should be some MRR for the PSD conditions in the permit. The permit will now include a requirement to monitor, record, and report the hours of operation of each turbine.

Khalil Porter agreed with the proposed change via email on May 1, 2020.

4. Update specific condition for 02D .1100 to reflect the current DAQ standard wording.

Response: Done. Ultimately, this is only for clarity and will not change the facility's compliance requirements.